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# DETERMINANTS OF THE VENTURE CAPITAL

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## Summary

In this paper I will briefly discuss and explain my theory and logic behind the determinants of VC financing that I consider most relevant. It is important to understand how they relate to the provision of venture financing and it is directly related to the analysis of the policy attempts to model a venture capital industry in different environments, which is a focus of the next section of this text.

Generally, the identified sets of determinants lie in three broad categories. These include: the existence of the avenue of exit for the venture capitalists - usually thought of as the presence of a large and liquid stock market; favorable legal, fiscal and regulatory framework supportive of the private business initiative; and the presence of a strong human capital base.

**Keywords:** Venture capital, private equity, stock markets, liquidity, law and finance, bankruptcy, government policy, taxes, moral hazard, agency problem

## Determinants of the venture capital

### 1.1. Introduction

In the venture capital financing process there are three distinct parties involved, and they all contribute to the company because of their „selfish" reasons which motivates them, at the same time, to make a profit and behave rationally. The inventor/founder applies for the funds to the venture capitalist (VC). VC receives the funds from the outside investors and puts them into this new, promising company. He supports the company in stages of development (seed, start up, expansion, maturity, IPO) both financially and through the

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management advice and industry connections until the firm reaches maturity. Upon maturity, the company's stock is sold at the initial public offering (IPO). Through IPO, the venture capitalist collects their own personal profit, distributes the share to the outside investors and hands back the company management to the founder. For the VC, it is important that company succeeds for two reasons, his personal reputation and possibility of obtaining funds from the outside investors in the future. For the founder it is also a question of personal profit form the equity sale but also the incentive of retaking the firm's management after the VC has exited the investment and for the outside investors their retribution in profit. So, on the micro level, all the stakeholders are motivated to play their role in a common goal of building up a company and their roles are highly interrelated and interdependent.

From a macro perspective, this process is not independent from the outside environment in which the venture financing takes place. In order for investors to bet their money on a particular business plan, there need to be innovators who will bring about the intellectual property product for profit to the market in the first place, there need to exist specialized venture capitalists who will seek to raise the funds and turn them into financial gains. Inseparably, there needs to exists a mechanism that would make this process possible and its quality will depend on the variety of factors which might be of economic, legal, institutional, regulatory, fiscal, social or cultural nature. In other words, there are determinants that affect the venture capital demand and supply.

Research focusing on the drivers behind venture capital phenomenon is still relatively scarce and in its early stage given the economic significance of VC and the impact it has had over the past couple of decades. More closely related to our discussion in this section, studies of Black and Gilson (1998), Gompers and Lerner (1998, 1999, 2001), Jeng and Wells (2000), Da Rin et all (2004) and Michelacci and Suarez (2000) investigate the influence of stock markets on venture capital. Other studies like those of La Porta, Lopez-de-Silanes, Schleifer and Vishny (1997,1998), Cumming and Fleming (2002), Armour (2002), Bottazzi, Da Rin and Hellmann (2003) and Armour and Cumming (2004) analyze the role of the law and certain aspects of legal systems in venture capital financing and Milhaput (1997), Black and Gilson (1998), Baygan and Freudenberg (2000), Vermeulen (2001), Bottazzi and Da Rin (2002), Rigaut (2002), Scwienbacher (2002) and Hege, Palomino and Scwienbacher (2003) investigate the cross country variation and difference in venture capital industry practices in United States and Europe/other countries. There are also numbers of papers investigating the impact of taxation regulation, labor market rigidity, GDP, market capitalization growth, etc.

If we can identify the defining factors behind the well functioning VC industry, than we can have a clearer view of applying it elsewhere. From the practitioner's point of view, various venture capital associations, such as the

European Venture Capital Association (EVCA), also publish the annual list of the factors considered to be the index benchmarks for the environment supportive of the venture capital industry.

Difficult aspect of VC analysis that would lead to a proposition for a global model of venture capital is in the fact that most countries, developed and particularly developing, differ in their macroeconomic, structural, institutional, legal, regulatory, fiscal, cultural and social set up and experience. For instance, even if we can identify a legal or regulatory variable that significantly impacts the VC investments in one country or a region, it may not be an easily possible, practical or straightforward task of altering that same variable or applying it in another country as it might be related to, or complemented by, other, untested and perhaps unalterable social, regulatory or cultural factors. In addition, a firm specific data for a detailed analysis is usually hard or simply impossible to obtain.

The paper focuses on the related financial theory in section one, section two examines two practical attempts at starting up a VC industry in two distinctly different (financially speaking) environments, Germany and Israel, and draws the conclusion form their experience. Last section concludes.

### 1.2 Demand for Venture Capital

Demand for venture capital financing comes from the entrepreneurs with innovative ideas. What could determine this level of demand for venture financing? First, there have to exist the incentives on the part of entrepreneurs to engage in the formation of a company in the first place. Founder of a start up is looking to make a financial profit and the private business has to be his best possible alternative to do so. He has to be adequately motivated to pursue his own business. Accordingly, the factors that would play a role in his decision to demand the VC financing are related to the regulation and the nature of the labor market, the capital gains tax rate and tax system in the country, bankruptcy regulation as well as the presence of a strong and liquid stock market. Finally, a general innovation potential of an economy would define a number of skilled entrepreneurs as the generators of ideas, or human capital endowment of a country demanding the venture capital financing.

In the economies with rigid labor markets, the entrepreneur will be less inclined to start his own business than in an economy with flexible labor market. He will consider his eventual pay off from running his own company and compare it to his pay off and benefit structure as an employee. In the labor markets that are particularly rigid, where employment in a company is usually life-long and secure, where benefit package is sufficiently large and which offer high social status, scientist have little incentives to give up their lucrative positions as employees and start a risky business. Furthermore, failure to succeed in the start up could mean permanent loss of a chance to regain the employment in a company they came from. Flexible labor markets offer less job security, but an easier way to enter and re-enter the labor market should the private business fail where as success in the running of own business usually offers a higher pay off and social status than in the rigid markets. Therefore we would expect more private business activity and VC demand in flexible labor markets than in rigid labor markets.

Tax system affects the portion of the revenues that entrepreneurs get to keep for themselves. Higher the capital gain tax rate, one simply gets to keep less money for them, and logically is less motivated to run their own business. Therefore moderate taxes should provide for the increased incentives to seek the equity finance and higher tax rate, especially if they are progressive since returns on VC investments are supposed to be particularly high, would reduce the demand for VC.

Bankruptcy regulation is related to the opportunity cost of running a private business, especially in the decision phase of forming a company. Before there is any VC financial backing available, entrepreneur has to devote a substantial amount of time to the formation of the company which often means giving up their employment and living on savings, they may have to borrow relatively large sum of money to start with the company and if they have to face a burdensome bankruptcy rules, with long time to discharge, they will not be motivated to form a company or they may not be given a second chance to do so should they fail the first time. On the other hand, if bankruptcy rules do not penalize the failure so severely and if time to discharge is relatively short, than entrepreneur will find the decision to take the risk less troublesome and is more likely to start a company and eventually apply for the VC financing.

Related to the necessity of exit options discussed in the previous section, demand for venture capital is connected to the availability of a liquid stock market as an avenue of financing the VC projects. Since venture capitalists exits the investment at the point of IPO, it is expected that entrepreneurs will also prefer this form of financing as it offers them a way of regaining control (or at least part of it) over the company. In addition, the more developed financial markets are, less likely it is that there would be in-house R&D conducted on the part of large companies, and more likely it is that the inventors would be seeking a private profit through the demand for VC.

Finally, VC finances inventions and high – tech businesses and stronger the human capital of a country, more likely it is that there would be more skilled entrepreneurs with intellectual property patents demanding the venture capital backing in an economy.

### 1.3 Supply of Venture Capital

Venture capital is supplied by the actively involved venture capitalists who invest portion of their own funds into the selected projects and who connect the outside investors with these projects. Therefore what would have an effect on the level of supply of VC in an economy are the incentives for the active VCs and incentives and quantity of the outside investors to engage in financing the VC backed projects, as well as the relationship between the outside investors and VCs.

We know that venture capitalists add value and realize profits by intervening in the start ups, selecting and screening the applicants and controlling the management decisions. Therefore, the incentives for VCs to finance the start ups will exist only if there are no prohibitive regulations preventing the venture capitalists from adding the value and having the contractual tools to add the value to a portfolio company (management controls in terms of - board participation, veto decisions, power to replace the management and deny funding, preferred stock options, etc.).

Taxing regulations as well as labor rigidities also affect the decision of skilled managers, best of whom are former entrepreneurs, to engage in venture financing of new companies, as well as the incentives of outside investors put their money in venture capital backed projects. Higher the tax rate, larger the proportion of the revenues that has to be given to the government and smaller the incentives for the supply of VC financing. This is the case for both, the active venture capitalists and the outside investors who provide the larger portion of the funds.

More rigid the labor market, higher the opportunity cost of running a VC firm instead of being an employee for a large corporation and less likely that there will be many former entrepreneurs, with an experience of building up their own company and taking it public that will be engaging in the business as a venture capitalist.

Level of human capital endowment is also crucial for the venture capital supply in an economy since the quality screening, monitoring, financing and nourishing a portfolio company can be done only by the skilled managers.

Existence of liquid stock markets is just as important for VC supply as it is for the VC demand. Lack of exit options would hurt the provision of active venture capitalists but also of outside investors to provide the financing, since the best way for them to collect their share of profits is through a developed IPO market. Stock markets and the successful exists are also a way for VCs to demonstrate their abilities of making a profitable company to the outside investors, and a way to build their reputation for the future funding of high-tech companies.

To recap, the level of VC financing is likely to be higher if the regulations that govern the relationship between the outside investors, active VCs and entrepreneurs are such so that they have good, profit making, incentives to engage in the business, and are best enabled to overcome the agency problems characteristic to a financing of an idea based business with large asymmetric information issues.

It is important to note that simply identifying the drivers of VC financing, especially as they relate to a sophisticated market such as the US, can hardly amount to sufficient guidelines for a policymaker in a different country. The challenge, as mentioned earlier, remains to apply the defying aspects of this system elsewhere. Given the fact that VC industry in the US was not engineered but has evolved over time and in a given, unique environment, we can only use these determinants as pillars upon which to construct a model for other nations. In the next section we will discuss the previous attempts by the governments to create a VC industry and see how we can use this analysis for the policy recommendation.

## 2. Modeling the VC in Emerging Markets

As stated above, creation of a sustainable VC industry should encompass the provision of several key factors that could roughly be grouped into: legal and regulatory framework welcoming of the entrepreneurial effort and such that contractually enables all parties to overcome the agency problems; provision of access to the liquid stock market and the presence of a critical level of strong human capital base - both as it relates to the innovative capacity of the entrepreneurs and the provision of the sufficient number of skilled intermediaries as the actively involved, specialized venture capitalists.

One thing we can claim with certainty is that the VC industry has originated in the United States and that this market remains the most sophisticated and advanced VC market in the world. American financial system is defined as a stock market based system and naturally, one would expect the provision of VC to be a relatively easier task in a more similar system than in one where, for instance, banks play a more dominant role and where a civil legal code provides for a lesser protection of the shareholders One would also expect that a well developed country with a very educated labor market would be adept to engineering a VC industry from the start with a relative ease, or at least that it would understand the basic incentive relationship between the shareholders and accordingly apply those principles in an effort to incubate the VC industry. But even though the availability of these factors (stock markets or good economic infrastructure) is important to the VC industry, it is no way sufficient. Systems differ in terms of their economic structure and legal heritage, but also in the level of the entrepreneurial culture and social incentives to become an entrepreneur. If we are starting a VC industry from the scratch the questions arise as to what role is there for the government and where should it start from? Should it provide the funding and hope to bolster a demand for VC, or does it need to make some legal or regulatory adjustments, or should it be a combination of two? In the process of seeding a new VC industry, what should be the condition for funding and who should be entrusted with the screening process and monitoring?

We will see that success will depend on the ability of the policymakers to understand the core principles of venture financing as discussed in the section two and three. Failure to understand these principles, which are based on *strong incentives*, can be a cause of a poor and wasteful policy design. Practice has shown that provision of VC is very sensitive to the existence of *private profit making motives* of all stakeholders in the process and VC fund design that can overcome the problems of agency and asymmetric information. Existing institutions are not always adept, or sufficiently motivated to harness the emerging VC industry. If the policymakers fail to incorporate the tools reflecting this relationship, they may not just waste their time and funds but impede the creation of the venture capital industry.

After analyzing the past policy efforts in this direction, we can arrive to a new, clearer role of the government in the VC creation process, precisely: given the existing economic and institutional realities, what can the government best do to create the *environment* in which all parties in the VC investment process feel maximally *motivated* to align their interests? In other words, do the structural set up and contractual aspects solve the *agency problem* inherent in the VC type of investments? Can we make a relationship system where the manager of the fund will have absolute *incentive* to pursue a shareholder wealth maximizing goals? Further, how do we best arrange so that VC can freely exercise their *value adding* role which consists of taking full managerial control and monitoring? Would the condition for funding sufficiently *screen* for the serious entrepreneurs and will the *shareholders* be driven by profit but stay *out of the investment decisions* and would the entrepreneurs deliver the maximum effort to develop the product and help the company mature? The comparison of the experience of Germany's WFG fund and Israel's Yozma fund is a case in point.

### 2.1 Germany

Organized as conscious effort on the part of the German government to jump start the VC industry, the WFG was doomed to fail (internal rate of return negative 25.07) due to the *inappropriate contractual and governance structure* under which it was set up. It lacked tools that would sufficiently mitigate the agency problems between the shareholders and entrepreneurs and motivate them to align their interests. Main shareholders of the fund were government and biggest German banks, the only dominating financial institutions in Germany. Motivation for the government to create the fund was the apparent technology-market gap in the German economy, it wanted to commercialize the industry technology and it could rely only on the banks for funding. But the primary concern for the banks was maintaining the reputation and minimizing the risk. Hence, the very first obstacle for WFG was conflict of interest among main shareholders. The WFG governance structure thus, instead of emulating the relationship of interdependence and alignment of the goals, did not solve the agency problem between them. In addition, the board representation was split between the government and bank officials with a different agenda, and WFG failed to provide the appropriate motivation and screening device for a good selection of entrepreneurs. Its criteria for selection of applicants, among other, contained a provision that „WFG will only finance companies that could not have obtained financing elsewhere." This exacerbated the adverse selection and free riding problem. These institutional problems were transferred to the relationship between the WFG and the entrepreneurs in the structural set up of the fund. Mainly, since WFG took the minority equity position with no power to replace the founders and provide managerial assistance, the core function of the VC investment financing, the value adding role, was missing from the equation. Portfolio companies did not receive strategic business advice and professional assistance in product development as it would be the case under usual VC project investment. Instead, they were only offered assistance with accounting. But given the premise under which fund was designed - the essential aspect of management guidance was not even desired. WFG also offered self imposed caps on the upside of the deal, stipulating that it might exit the deal as soon as the portfolio company became profitable. So the WFG problem extended not only to the relationship between the outside investors and the VCs or question of where monitoring role would come from and if the management would be skilled enough with the business aspect of developing and marketing a high-tech product. It was actually designed so that the environment in which the management would have disposable tools for exercising the founder replacement and guidance control did not even exist. This meant that value-adding role was missing from the WFG formula and that the agency problems on all levels were unresolved.

In conclusion, the poor performance of WFG was inherent in the weak institutional and contractual governance structure of its set up. It was essentially the failure on the part of the policymakers to understand the business model under which the venture capital is supposed to work and reflect it in the contracts governing the relations between the stakeholders. Consequently, the premises under which the WFG was designed as well as the conditions for provision of funding resulted in no incentives, no monitoring and bad project selection.

Overall, for this to come about, Germany also must have had the underdeveloped entrepreneurial culture – reflected in lack of knowledgeable government officials and lack of appreciation for the VC support on the part of inventors. In addition, status of businessman was not looked at admirably. We know from the above discussion, that rigidity of the labor market, as it was than in Germany, guaranteeing a lifetime employment in a major company, did not offer proper social incentives for the innovators to engage in entrepreneurship. Result was that most start ups were managed by inexperienced founders with no business training or understanding the way VC works. They neither received nor wished to receive management support.

It has also been shown that, only with the subsequent shift in the labor market reflected in the arrival of new generations of entrepreneurs, more appreciative of, and familiar with the Anglo-American style of business venturing, German VC industry was able to make a turn for the better and start to make some progress. Understanding that this kind of business model needed both, improved access to the stock market and provision of incentives driven by the profit making agents, only than, Germany was able to attract more talented people to entrepreneurship and create more suitable ground for the VC development.

### 2.2 Israel

Contrary to the German original effort to start the VC industry, Israel's experience shows that a better understanding of the incentives structure leads to a better result. Israeli government established Yozma Ltd. In 1993 through which it created nine venture capital funds in which it was a partner. Instead of giving a call option to the entrepreneurs, such was the case of German WFG; Yozma considered the basis of the incentives structure and monitoring and gave it to the fund.

It matched up to forty percent of other investor's capital who had a call option on Yozma's investment at cost plus nominal interest and seven percent of future profits. Whereas WFG's subsidy to the entrepreneurs and the banks created no incentives to monitor, Yozma's subsidy to other investors strengthened the incentive to monitor by accepting a large share of downside risk. Contractual arrangement stipulated that Yozma would not make the investment decisions, but those who held the private stake in the investments. In 1997, funds were successfully privatized.

In addition, government looked to encourage the investment into VC through favorable taxing legislation regarding the personal investments. Low capital gains tax rate including a temporary legislation allowing tax-free investing in Israeli venture capital funds by foreign VC funds which had tax-free status in their domestic markets. This had an effect of stimulating the investments in private equity which in turn spurred development of active, vibrant and liquid equity markets which was critical for the rapid development of the Israeli VC industry.

## 3. Conclusion - Lessons for Policymakers

As we have seen, in order for any viable VC model to function, all the stakeholders need to have strong incentives, the contractual framework and governance structure has to reflect this in order to fully mitigate the agency problems to which the VC type of investing is very sensitive. If these issues are overlooked, any provision of government founding is bound to be a waste of money or even an impediment to creation of VC industry as the moral hazard problem is not solved but exacerbated and poor project selection and free riding can crowd out possible private investments, if there are any.

Policymakers in Israel have understood the rationale behind the venture capital investments better than their counterparts in Germany. Yozma was better designed than the WFG, which lacked contractual and structural elements to solve the agency problems. Perhaps this is not a surprise since Israel had a stronger entrepreneurial culture than Germany, it was a society more open to the business ownership and venturing and policymakers there were able to design a VC model that would emulate the American model as best as possible. In spite of Germany being one of the most advanced economies in the world, they found it more difficult to start with a business model uncharacteristic to the German experience. They had a tradition of bank-based financial system, company ownership held by families and supported by those risk-averse banks. Business success, normally accepted in Anglo-American society, was uncommon, R&D was done in house and inventors retained as employees in the large companies.

If we take the American institutional set up and business environment to be the original ground for the VC, than any environment deviating from that model would imply more difficulty for the implementation of the VC industry. Characteristics of the American investment environment have features much in line with the drivers behind the VC demand and supply discussed in the previous section. Besides the stock markets based financial system and a very strong entrepreneurial culture and mentality, they also consist in:

- Contracting practices and governance structure that count on *value adding* role of independent VCs, provide for the monitoring process by the actively involved and profit driven fund managers who hold the *tools to enforce their managerial control* and entrepreneurs who understand and appreciate the role of VC;

- Strong participation of outside investors (especially large institutional investors such as pension funds motivated through the favorable tax regulation), but as shareholders who have *no say in investment decisions* of VCs; In addition, they have a
  - Liberal (flexible) labor market;
  - Non prohibitive, stimulating taxing regulation for outside investors, VCs and founders and;
  - Favorable bankruptcy laws.

And larger the deviation, more difficult the creation of the VC would be. If the US, followed by other similar economic and legal systems such as UK for instance, are on the one extreme of the scale and the state owned, non liberal regimes with non transparent regulatory system and no stock markets on the other extreme of the scale - than we can think of an *economy characteristics continuum* within which a country, with all its complementary characteristics of: economic level of development and infrastructure, regulatory and legal framework, fiscal conditions and rigidity of the labor market, and entrepreneurial culture, can be placed.

Governments that seek to implement a VC industry can be best advised to make the legal adjustments and reforms that would bring them closer to the environment that promotes and protects the incentives of all the stakeholders. A fund created to seed the VC will not be successful if it is not designed to *structurally mitigate the moral hazard problem between the shareholders, managers and inventors inherent in this type of investments*. But beside this, there need to exist the *incentives* for the outside investors, venture capitalists and entrepreneurs to emerge as interested parties in the first place.

Development of domestic stock markets is important and eventually necessary for any serious VC industry to be sustained. But they cannot be simply designed overnight and made to work profitably regardless of the general legal and regulatory environment. Before markets can become vibrant and liquid, there has to exist a favorable legal environment and contractual design governing the relationship between the stakeholders that incentivizes all parties to get involved in the process in the first place. If, on the other hand, the legal, regulatory or tax environment is prohibitive of the VC investing, neither the demand for nor supply of venture capital will reach a critical stage for the creation of and sustained activity of liquid stock markets.

It is also possible to make use of listing on the regional or foreign stock markets as well. Countries with less developed domestic stock markets, but good business connections abroad, have shown that this is possible. Israeli companies have mostly listed on the NASDAQ and experience of Singapore also shows that they have managed to achieve significant growth without having a very strong domestic IPO market.

Creation of favorable investment environment implicitly helps the growth of stock market and IPO activity. If investments become more frequent and profitable, access to funds will be easier. This, over time, breeds the generation of entrepreneurs and managers with experience, their success becomes something that upcoming investors would like to emulate and their profit is something that new managers would like to achieve for themselves and where outside investors would like to put their money in. In other words, when the economy learns to appreciate the VC business model, capital market activity becomes a normal thing - even failure is seen as a learning process, and this in turn lays the ground for establishment of the more liquid and vibrant stock markets.

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